and provisions made for contributing, sustaining and patron memberships.

A preliminary meeting to discuss organization plans and to nominate officers of the American Meteorological Society will be held at the close of the meteorological program of the Philosophical Society of Washington, Saturday evening, December 20. The meeting for organization will take place at Soldan Hill School, St. Louis, December 29, at 2 P.M., and sessions for the presentation of papers will be held December 30 and 31. Joint sessions are being arranged with the American Physical Society and the Association of American Geographers for December 31 or January 1. Plans are being made for a meeting in New York on January 3.

A tentative constitution and by-laws, conforming as far as possible with the numerous and diverse suggestions received, is being drafted, and will be printed about December 10, along with the programs and abstracts of papers to be presented at the St. Louis and New York meetings. These, with details as to hotel accommodations in St. Louis, will be mailed up to December 20 to those who have indicated their desire to join the society.

CHARLES F. BROOKS

WEATHER BUREAU,
WASHINGTON, D. C.

THE AMERICAN CHEMICAL SOCIETY.

V

FERTILIZER DIVISION

F. B. Carpenter, *Chairman*

H. C. Moore, *Secretary*

Injurious effects of borax in fertilizers on crops: B. W. KILGORE.

The conservation of nitrate of soda in the chamber process for the manufacture of sulfuric acid: ANDREW M. FAIRLIE. In connection with the prevalent protest against the high cost of food, means for conserving nitrate of soda in the manufacture of sulfuric acid has a two-fold interest: (1) The lowest possible consumption of nitrate of soda in the manufacture of sulfuric acid means low cost for producing the acid, and, as sulfuric acid is a principal item in the cost of making acid phosphate, cheaper sulfuric acid should result in cheaper phosphate, and cheaper phosphate, in cheaper food. (2) Nitrate of soda is itself an important ingredient of fertilizer, and any decrease in the consumation of nitrate for making acid should react in favor of a decreased demand, and so of a lower price, for nitrate of soda. The various methods of introducing nitrogen compounds into the acid-making process are reviewed, and the methods in common use for controlling the chamber process are briefly described. Attention is directed to the gradual extension of the analytical method for chamber-process control, and to the improved results attained where this method has been adopted. The Gay-Lussac tower, as a means of recovering the nitrogen compounds, is not yet an ideal, nor yet an efficient, piece of apparatus, and the need exists for either (1) an improved type of Gay-Lussac tower; (2) an auxiliary to the Gay-Lussac tower; or (3) a substitute for that tower, capable of effecting a higher percentage of niter recovery.

Check meal work of the Society of Cotton Products Analysts (in particular reference to the moisture and ammonia determinations: F. N. SMALLEY.

The Deroode-perchloric acid method for determining potash: T. E. KEITT.

A rapid and accurate method for determining nitrogen in nitrate of soda by the Devarda method, and the use of the Davission scrubber bulb: C. A. BUTT. A rapid and reliable method for determining nitrogen in nitrate of soda, suitable for routine analysis, consists of reduction of the nitric nitrogen to ammonia by the use of 3 grams Devarda's Alloy, 20 mesh, in a solution of 300 c.c. volume containing 3–5 c.c. sodium hydroxide 45° Be. The distillation of the ammonia is carried out synchronously with the reduction, using the regular Kjeldahl apparatus fitted with the Davisson type of scrubber, which prevents alkali mist reaching the receiving flask. An aliquot of the nitrate solution, corresponding to .8517 grams sample, is used and the ammonia collected in $N/2H_2SO_4$. Titrations are made in the usual way, using methyl red indicator. Results are reported showing accuracy of method.

The rapid and accurate determination of nitrate, as ammonia, in nitrate of soda by a modification of the Kjeldahl-Gunning method vs. the deceptive west coast or refraction method. Correct and rapid application of the modified Kjeldahl-Gunning method to mixed fertilizers containing nitrate: H. C. MOORE. The author compares the various methods in common use for analysis of nitrate of soda,

referring to the relative convenience of these methods for fertilizer chemists. Also points out again that the West Coast method is deceptive and recommends that it be eliminated from contracts governing transfers of commercial nitrate of soda. Also shows development of a modification of the Kjeldahl-Gunning (sulfuric-salicylic) method for the rapid and accurate determination of nitrate, as ammonia, also indicates errors in this method as sometimes used. Also shows correct application of the method to mixed fertilizer containing nitrate.

The caking of sulphate of ammonia: C. G. Atwater and Dr. J. F. W. Schultz. Sulphate of ammonia, even when dried and screened to fit it for fertilizer use by itself as a top dressing, has shown a tendency to cake in certain cases. Examination of the material that had given trouble finally indicated in this case that the trouble was due to the presence of salts of pyridine bases which are deposited with the salt in the saturator. These impurities give the salt a slightly sticky nature; cause absorption of water and caking. By passing dry ammonia gas through the sulphate to neutralization, the pyridine was set free and the objectionable characteristics removed.

The caking of sulfate of ammonia and acid phosphate mixtures: C. G. Atwater and J. F. W. Schnultz.

The American potash industry: R. O. E. Davis. Domestic production of potash grew from 1,000 tons in 1915 to 9,000 in 1916, 32,000 in 1917, and 55,000 in 1918. At the close of 1918 there was a potash-producing capacity in this country of approximately 100,000 tons per annum. The sources of potash are widespread, covering about sixteen states in various sections of the Union. The main production has come from Nebraska and California. Fourteen cement plants have installed methods of collecting potash from flue dust. Two blast furnaces have similar methods in operation. Five molasses distilleries are recovering potash from their wastes. A number of beet sugar refineries recovered small amounts of potash. The Green sands of New Jersey are a source of potash for two plants. One plant is utilizing Georgia shale as a source of potash. One plant at Marysvale, Utah, is utilizing alunite, and kelp formed the basis of operation for four large companies on the Pacific coast. Other minor sources exist, such as wood ashes, wool washings, and the brines of the great Salt Lake basin. The best prospects for the development of a permanent industry in competition with foreign potash appears to be from the gradual solving of technical details of processes where potash can be obtained in localities near consumption centers and in the development of by-products. Western producers must meet the handicap of high freight rates to eastern markets, although the development of by-products and improved methods may overcome this handicap.

The relative availability of nitrate nitrogen and commercial organic nitrogen—field and cylinder experiments: A. W. Blair. For more than 20 years, the New Jersey Experiment Station has been studying by means of field and cylinder experiments, the relative availability of nitrate nitrogen from organic sources. The work has been conducted on two types of loam soil and also on a loam with varying admixtures of coarse white sand to represent soils varying in texture. For all of these soils, except those containing 80 per cent. or more of sand, the nitrates have stood first in yield of dry matter and percentage of nitrogen recovered in the crop. Under the most favorable conditions, only a little over 60 per cent. of the applied nitrogen can be recovered in the crop. Under less favorable conditions, the percentage recovery is much lower, often amounting to only one third of the amount applied. The average recovery of nitrate nitrogen in the field experiments was 37 per cent. and of organic nitrogen 26½ per cent. It is suggested that the reason for the larger return from nitrate nitrogen than from organic nitrogen may be found in the immediate availability of the former. The plant is thus given a good start and on account of the rapid growth which it makes, it is able to utilize the nitrogen more fully than the plant which must wait for a supply of available nitrogen, until the organic matter has gone through the process of decomposition.

Charles L. Parsons,
Secretary

(*To be continued*)

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